IN THE CLAIMS

1. A data storage device ~~(20)~~ for performing input/output of classified data in accordance with a constant procedure, storing said classified data, and operating to store history information or update at appropriate timing said history information in accordance with said constant procedure, comprising:

an interface ~~(212)~~ performing external input/output of data;

a data storage portion ~~(270)~~ storing said plurality of classified data;

a log storage portion ~~(253)~~ storing a plurality of items of the history information relating to the input/output of said classified data; and

a control portion ~~(214)~~ controlling the input/output of said classified data, wherein

said log storage portion ~~(253)~~ is provided as a ring buffer circulatively utilizing two or more regions each storing one item of said history information,

each of the plurality of items of said history information stored in said log storage portion ~~(253)~~ includes identification information identifying the classified data storing the history information and being to be input/output, and

said control portion ~~(214)~~ receives the identification information identifying the classified data to be input/output in accordance with start of input/output processing of said classified data, searches a plurality of regions ~~(2531 – 253N)~~ in said log storage portion ~~(253)~~ in a predetermined order, determines the region storing the earliest item of the history information stored in said log storage portion ~~(253)~~ as the earliest region, and newly stores the history information relating to the input/output processing of said classified data including said received identification information in the determined earliest region.

2. The data storage device according to claim 1, wherein

in history information output processing of outputting a part or the whole of the history information in response to an output request for the history information,

said control portion ~~(214)~~ receives via said interface ~~(212)~~ the identification information of the classified data to be input/output, searches the plurality of regions ~~(2531 – 253N)~~ in said log storage portion ~~(253)~~ in accordance with a predetermined sequence, determines said earliest

region as well as the region storing the latest history information including said received identification information as the latest region, and outputs a part or the whole of the history information stored in said latest region via said interface ~~(212)~~.

3. The data storage device according to claim 1, wherein

in the input processing of said classified data including outputting of the history information,

said control portion ~~(214)~~ receives the identification information of the classified data to be input/output via said interface ~~(212)~~, searches the plurality of regions ~~(2531 – 253N)~~ in said log storage portion ~~(253)~~ in a predetermined sequence, determines said earliest region the latest region storing the latest history information including said received identification information, copies a part or the whole of the history information stored in the determined latest region into the determined earliest region to store the copied history information as new history information relating to the input processing of said classified data, and outputs a part or the whole of the history information stored in said determined earliest region via said interface ~~(212)~~.

4. The data storage device according to claim 2 or 3, wherein

in re-output processing of said classified data including inputting of one additional item of the history information recorded in accordance with progress of said constant procedure by another device,

said control portion ~~(214)~~ receives the identification information of the classified data to be input/output and said one additional item of the history information via said interface ~~(212)~~, determines said earliest region and said latest region, and determines whether said classified data is to output or not, based on the history information stored in the determined earliest region and said received one additional item of the history information.

5. The data storage device according to claim 2 or 3, wherein

in the output processing of said classified data including inputting of one additional item of the history information recorded in accordance with progress of said constant procedure by another device,

said control portion ~~(214)~~ receives the identification information of the classified data to be input/output and said one additional item of the history information via said interface ~~(212)~~, determines said earliest region and said latest region, copies a part or the whole of the history information stored in the determined latest region into the determined earliest region to store the copied history information as the new history information relating to the output processing of said classified data, and determines whether said classified data is to output or not, based on the history information stored in said determined earliest region and said received one additional item of the history information.

6. The data storage device according to claim 1, wherein

after said earliest region is determined,

said control portion ~~(214)~~ updates at appropriate times the history information stored in said determined earliest region in accordance with progress of the constant procedure before end or interruption of the constant procedure in said input/output processing.

7. The data storage device according to claim 1, wherein

each of the plurality of items of said history information further includes a management number ~~(2541)~~ for identifying the sequence stored in said log storage portion ~~(253)~~, and

said earliest region storing the earliest information is detected based on the management numbers ~~(2541)~~ respectively included in the two items of the history information stored in the two regions arranged continuously in said log storage portion ~~(253)~~.

8. The data storage device according to claim 7, wherein

said log storage portion ~~(253)~~ is formed of a ring buffer circulatively utilizing regions ~~(2531 – 253N)~~ of N (N is a natural number larger than one) in number, and

said management number ~~(2541)~~ is in a residue system of M (M is a natural number satisfying (N < M)).

9. The data storage device according to claim 8, wherein

said control portion ~~(214)~~ obtains each of the management numbers ~~(2541)~~ respectively

included in the two items of the history information store in the two regions arranged continuously in the log storage portion ~~(253)~~, determines whether the two items of the history information including said two management numbers ~~(2541)~~ are stored continuously or not, based on a difference between the obtained two management numbers ~~(2541)~~, and detects the following region between said two continuous regions as said earliest region when the two items of the history information are discontinuously stored.